

Notes from my herbarium. I.

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A few notes from my herbarium, relating to some of the plants which I have collected from time to time, may be of interest. Roots, runners, rootstocks and the like are rarely well represented in collections, and yet how incomplete the plant is without these characteristics, and what important functions they often fulfil in the economy of nature.

LATHYRUS MARITIMUS Bigelow. Beach pea.

I have a specimen of this species, represented on three sheets. I collected it on Aug. 31, 1888, at Hyannisport, Mass. It was growing in the clear sand near the water, and its importance in helping to bind the sands, and thus to resist the ever-encroaching waves of the sea, can be seen from the following note which I made at the time, and copied on one of the sheets: "The main rootstock of this plant was nineteen feet long. The stock ran along but a few inches, from one to four, under the sand. The nodes of the rootstock were from six inches to one foot apart. At intervals of from one to three feet, short roots were thrown off from the stock at the nodes. There were three branches from the main stock, the longest one being six and one-half feet. These branches were also branching. The fresh young stocks were very white, succulent and brittle. The root descended abruptly two and one-half feet, branching slightly at the end. From the stocks rose eight fresh plants, and three dead stalks of last year's plants." This is certainly a most astonishing record for a single plant. I retained for my herbarium enough of the plant to show all its features, even including the nineteen feet of rootstock. By coiling the stock, I easily managed it. It is about one-eighth of an inch thick, and makes a flat mat, which is readily mounted.

AMMOPHILA ARUNDINACEA Host. Sea sand-reed.

On Aug. 13, 1886, at Rye Beach, N. H., on a sandy beach, I dug up a complete tussock of this tough grass. By a judicious cutting off of the top of the plant, leaving enough to show a few leaves and the inflorescence, and by using a very heavy pressure, a fine specimen was made, showing the size

of the plant, with its copious roots and running rootstocks complete. I find this a most satisfactory way of showing the character of the plant. The stocks are tough, wiry, and about a foot long. A specimen like this can easily be supplemented by other specimens, showing individual parts separately.

The character of this grass as a binder of the sea sand is well known. When the ever-shifting sands bury the plant a foot deep or more from its base, it appears as usual the next year, the new plant connected with its buried parent by a tough brown stem one-sixteenth of an inch in diameter, looking exactly like a wire, and rising straight from the center of the old plant. I have a plant from Nantasket Beach, Mass., showing this peculiarity.

RANUNCULUS CYMBALARIA Pursh. Sea-side crowfoot.

This species of crowfoot grows by the sea in various kinds of soil. The average height of the scape is from four to six inches. I have a vigorous plant from the Charles river salt marshes in Cambridge, with a scape eleven inches high. A most interesting feature of the plant is its long rooting runners. It is not always that these runners have a chance to display their greatest activity. When growing amongst other plants, such as grasses and the like, the plant seems to reach a greater development, but the runners have little chance to display themselves. On July 20, 1894, at Wells, Me., I found this plant growing in a ditch of soft black mud. It covered a space of a few square yards, and was literally yellow with flowers. No other plant of any kind hindered its growth and the runners were interlaced in every direction. I took up a single plant with six runners attached. The longest runner was two feet one inch long, and rooted eight times. The plant rooting at the first node was fully developed, bore a flower, and was sending forth a secondary runner which had already rooted twice. Another runner rooted seven times, the first plant bearing a bud, while the smallest runner rooted three times. The parent plant was small, the scape being barely three inches high, as if its numerous progeny had sapped its strength. By careful manipulation I arranged the plant so that it would come within the limits of a mounting sheet, without crowding the runners. It tells a most interesting story of rapid propagation.

ARALIA NUDICAULIS L. Wild sarsaparilla.

I find in my herbarium a fruiting specimen of wild sarsaparilla, which I collected July 19, 1883, in Shelburne, N. H., among the White mountains. The tough perennial root, one fourth of an inch in diameter, ran horizontally a few inches below the surface in opposite directions from the main stem. I dug it up till it broke, and on measurement found that I had a root eight and one half feet long. By coiling the two ends up to the stem, I easily made a good mounting specimen, which shows that far the greater part of the plant is under ground. It takes a separate mounting sheet to show one of the three divisions of the large compound leaf. Smaller specimens show the whole leaf of various sizes. Beside this large specimen I have put a very young plant, collected May 12, 1883, in Belmont, Mass. The scape is two inches, and the leaf three inches high.

GALIUM ASPRELLUM Michx. Rough bedstraw.

This species of bedstraw, which grows throughout the Gray Manual range, has a fine development of root-stock. I collected a specimen Sept. 6, 1889, in E. Jaffrey, N. H., and it takes an entire mounting sheet to show the underground growth. The root-stocks branch very freely from the stem, the longest one being two feet. They run along but a short distance under the surface of the ground, and root copiously at the nodes, which are about one inch apart. Young plants are sent up occasionally from the nodes. On my single specimen I count fifteen of these plants, varying from less than an inch to five inches in length.

ASTER ACUMINATUS Michx.

In a deep, rich wood at Rye Beach, N. H., Aug. 19, 1886, in company with *Woodwardia angustifolia* Smith, which was extremely abundant, I found this aster growing in the greatest profusion. It reached a perfect development here, for the plants ran as high as two and one-half feet. I took up a specimen which showed very beautifully the slender underground stems, connecting different plants. From a rootstock several inches below the surface, three rootstocks branched at intervals of about an inch. Each of these stocks, which were all fifteen inches in length, bore a vigorous plant, the one which I retained for my herbarium being two and one-

half feet high, with leaves seven inches long. The other specimens of this species in my herbarium are of the average size, from one and one-half to two feet high, with leaves about four inches long. Twenty shoots, from fifteen inches to less in length, branch off from the three stocks. All this tangle of rootstock I have mounted on one sheet, with about three inches of the stems of the three plants, mounting on a separate sheet the flowering specimen which I retained.

TARAXACUM OFFICINALE Weber. Common dandelion.

I have succeeded in mounting a specimen of our common dandelion with the large head of fruit intact. I did it in this way. I collected the specimen the moment the fruit had opened, and while the akenes were still firmly attached to the receptacle. In this condition I pressed it. By the time the plant was dry, I noticed that the akenes were free from the receptacle, but still in position. I always transfer all my plants too flimsy to handle to the mounting sheet or pasting sheet of blotting paper by reversing the plant with a sheet on each side. This saves much trouble, and the most delicate plants can in this way be very quickly handled and mounted. In the case of my taraxacum, however, I could not touch the pasting brush to the pappus on the fruit, as it would stick to it and spoil my specimen. So when the plant was on the mounting sheet unpasted, I made a few points with a pencil close to the edge of the pappus. Then, after transferring the plant to the pasting sheet, I pasted all the plant but the fruit, and, on the mounting sheet, I pasted the space between the points. By careful reversal of the plant again, the fruit fitted exactly on the former spot, where the glue received it and held it fast. A few blotters and a proper weight, laid on the sheet for a few hours, completed the work.

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